

# MCFRS

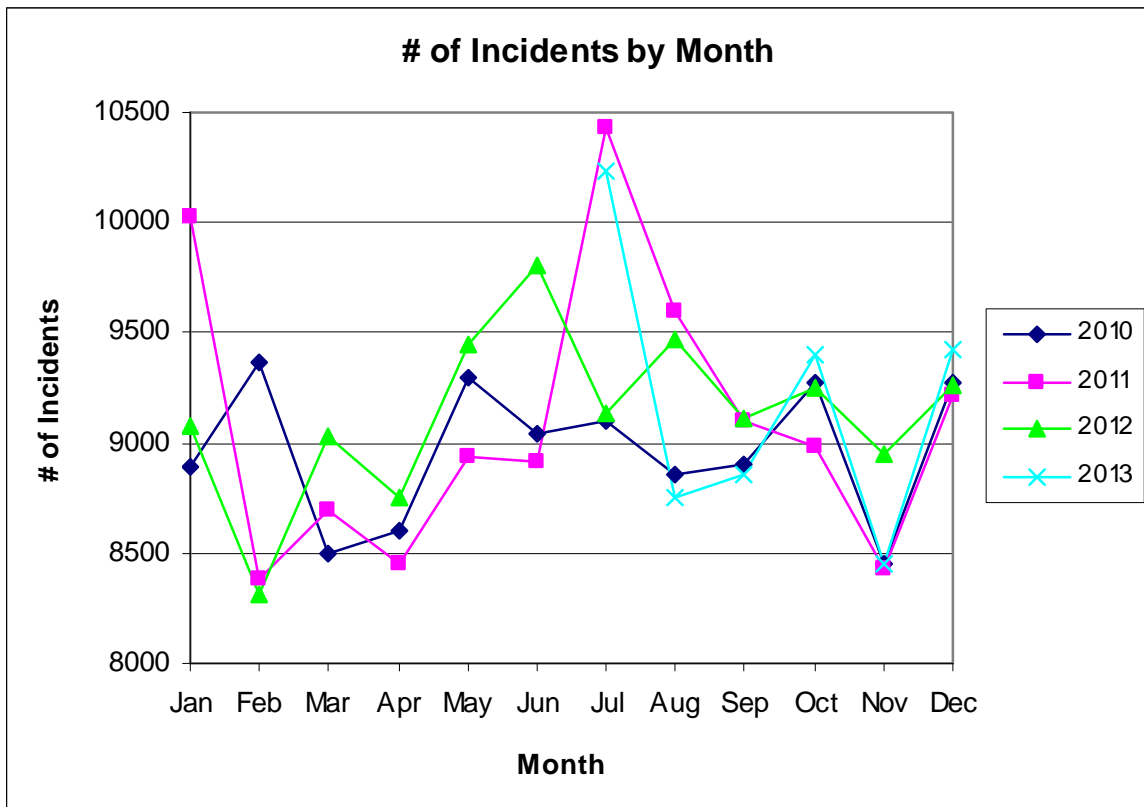
## COMMUNITY RISK ANALYSIS AND STANDARDS OF COVER

### H. Overall Evaluation and Conclusion Recommendations

#### Number of Incidents by Month

There is a significant variation in incidents per month for each fiscal year. For instance the number of incidents dramatically peaks in July for the 2011 and 2013 fiscal years, but is relatively average for the 2010 and 2012 fiscal years. This variation through the years is apparent throughout the graph, as no two curves are alike. While there is significant variation in this data, general trends are still apparent.

For example, the number of incidents are generally lower for the months of February, March and April and yet higher for the summer months of May, June, July and August. Also, it can be seen that November is consistently a month with low incident numbers. Overall, this data provides a good overview of how incidents vary by month and illustrates a very large range between months (approximately plus/minus 1000 incidents). However, the data set is inconsistent over the 2010 - 2013 fiscal years, and therefore is generally inconclusive.



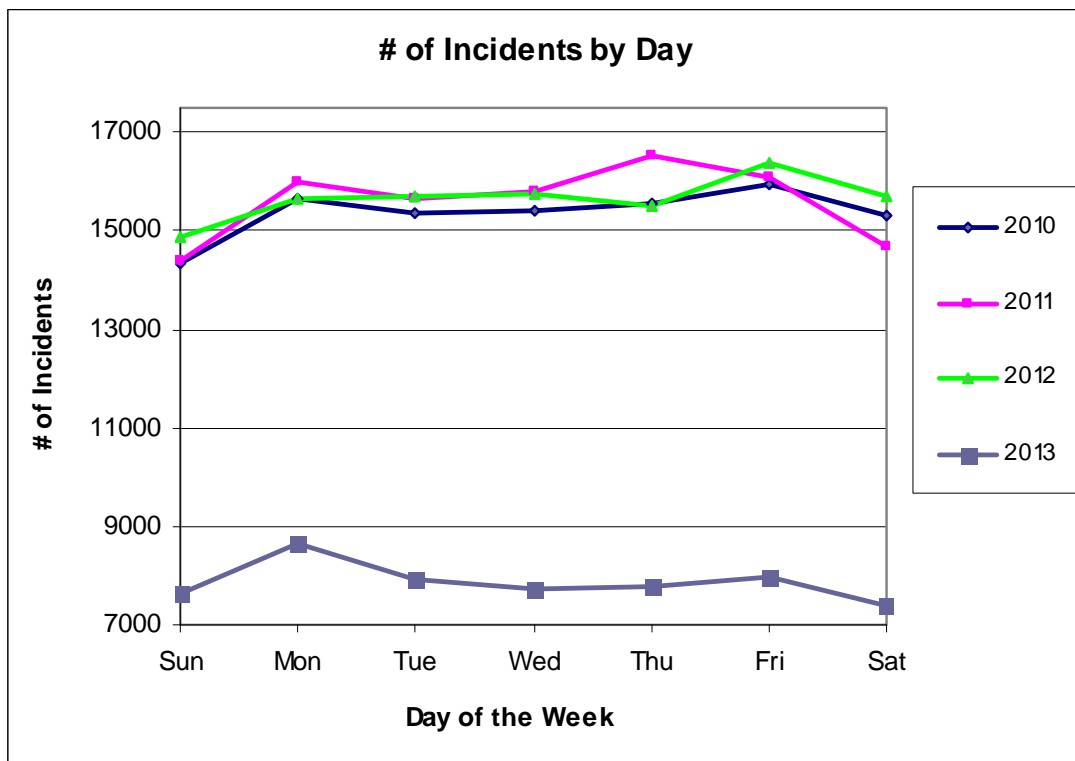
## MCFRS COMMUNITY RISK ANALYSIS AND STANDARDS OF COVER

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### Number of Incidents by Day of the Week

First, it is important to note that for this graph the 2013 data is only for the first two quarters of the fiscal year. This means that the total incident numbers collected for each day of the week are approximately half of the value of those collected for the other full fiscal years. This difference is apparent on the graph as the 2013 curve sits lower on the y-axis. Because of this difference, the magnitude of 2013 incidents obviously cannot be compared to the other full years. However, the shape of the 2013 curve can still be analyzed for trends and compared to the full years.

It can be seen that the first half of the 2013 fiscal year generally follows the same trend as the other years. All of the curves (2010, 2011, 2012, and 2013) show lower incident numbers on the weekends and then rise on Monday. All generally remain consistent through the weekdays. There is some variation in the curves by year. For example, in 2011 the number of incidents peaks on Thursdays, and in 2012 the number of incidents peaks on Fridays. While this variation does exist, it is not a significant variance. Overall this data shows that incident numbers generally remain steady throughout the entire week with little dependence on the day.



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#### Number of Incidents by Hour

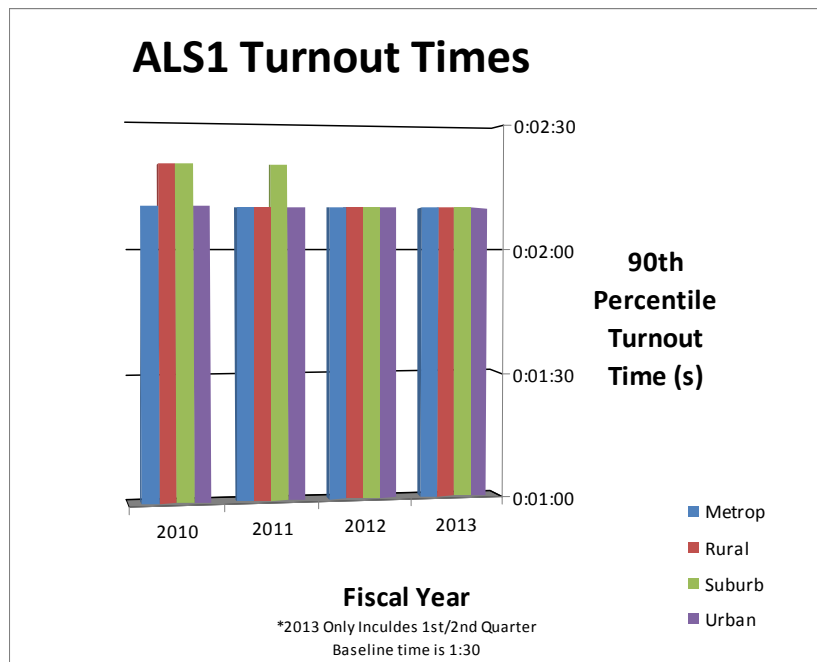
Once again, the magnitude of the 2013 curve is affected by the missing data, as the 2013 fiscal year is not yet complete. The incident numbers for each hour of the day in 2013 are once again approximately half of those for the full fiscal years because only the first and second quarters are taken into account. All four curves (2010, 2011, 2012, and 2013) follow the same general pattern. The peak hours for number of incidents are between 10A.M. and 7P.M., where there are roughly 6000 incidents per hour. The lowest numbers of incidents generally occur during the hours between 2A.M. and 4A.M., with the lowest being 3A.M. at roughly 2000 incidents per hour. In approximately linear fashion, the number of incidents rapidly rises between 4A.M. and 10A.M. and rapidly falls between 7P.M. and 2A.M. Upon looking at the graph it is notable that the number of incidents for each hour of the day is very similar over each of the last four years. This shows a long term trend, and overall it can be concluded that the trend shown is likely to continue into the future.

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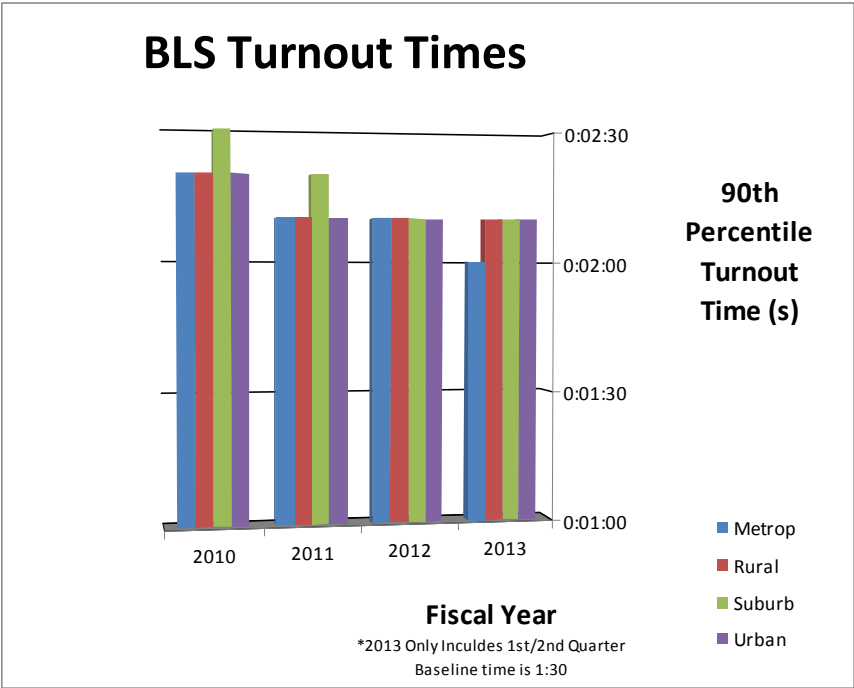
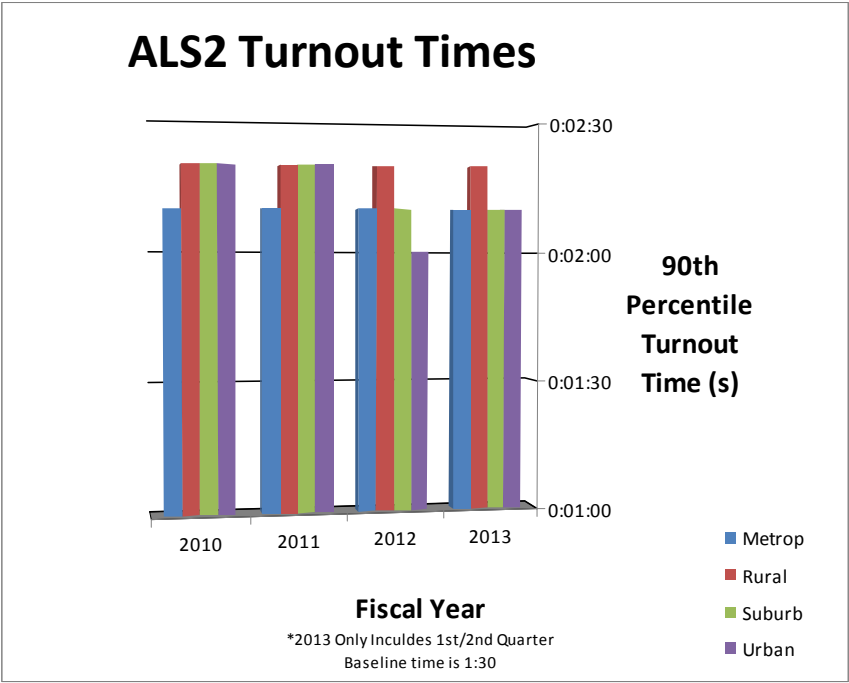
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### Turnout Times

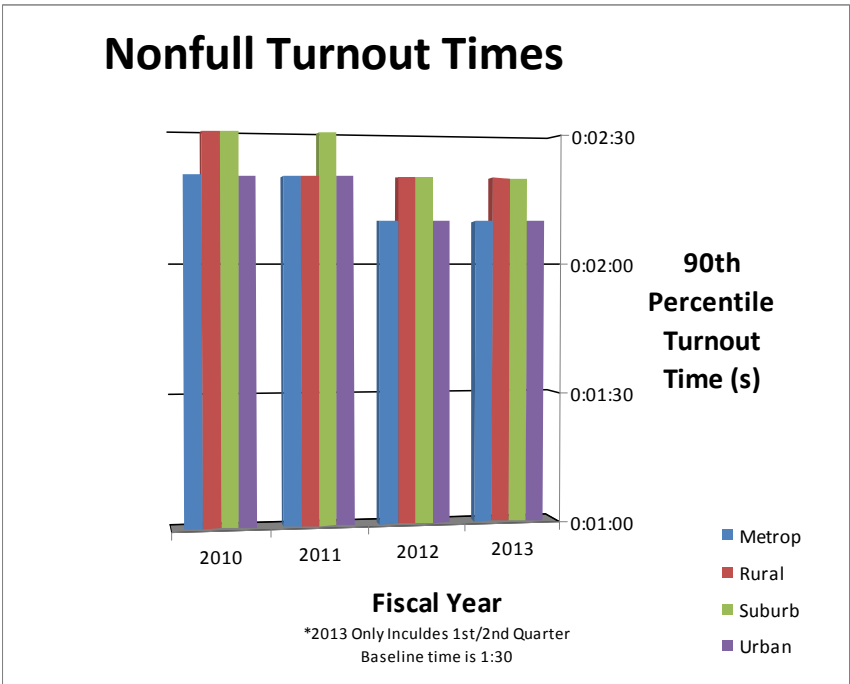
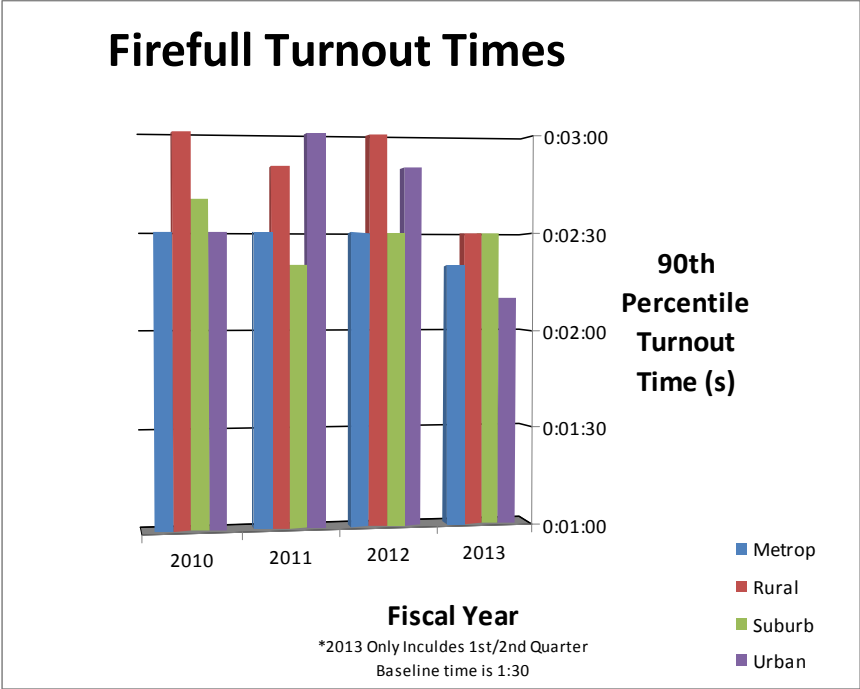
The baseline set for turnout times across all service branches is 1 minute and 30 seconds. This 90<sup>th</sup> percentile baseline time was not met by any of the service areas in any of the population densities, with the exception of two explosives calls which took 40 seconds and 80 seconds for turnout. Other than in these two incidents, a majority of the turnout times are between 2 and 3 minutes. However, there are apparent outliers. For instance, one explosives call took 17 minutes for turnout.



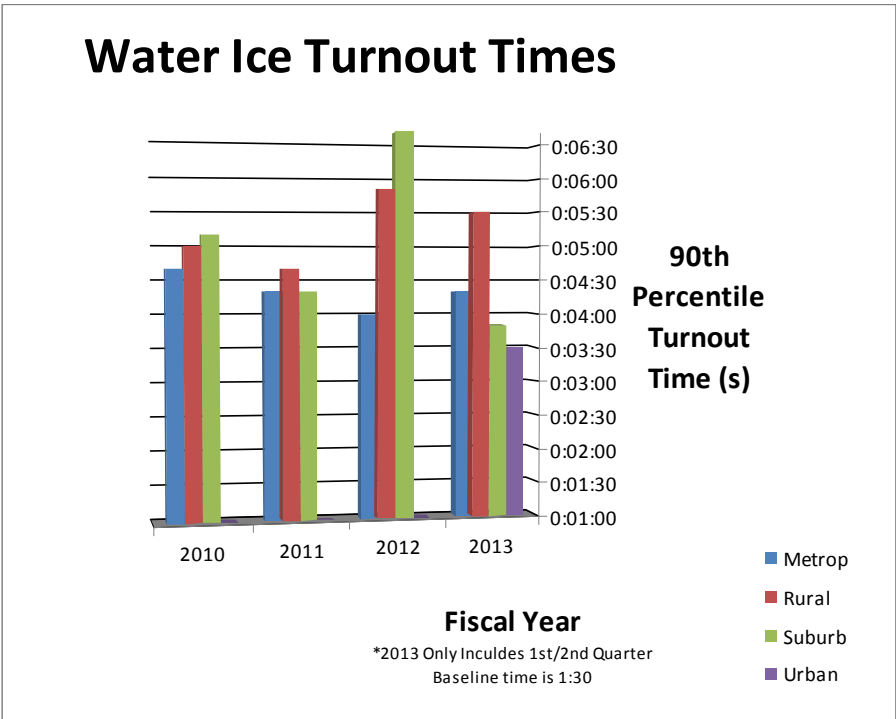
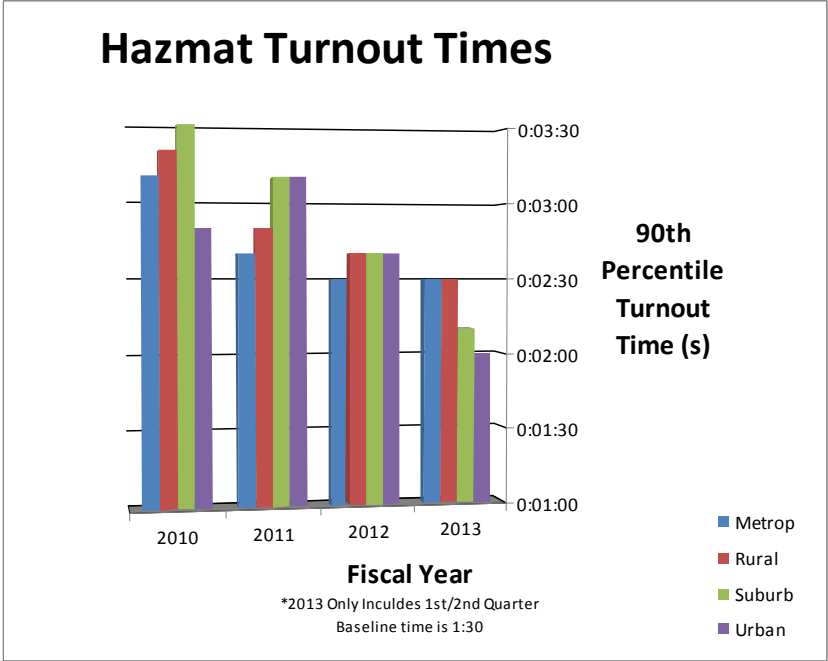
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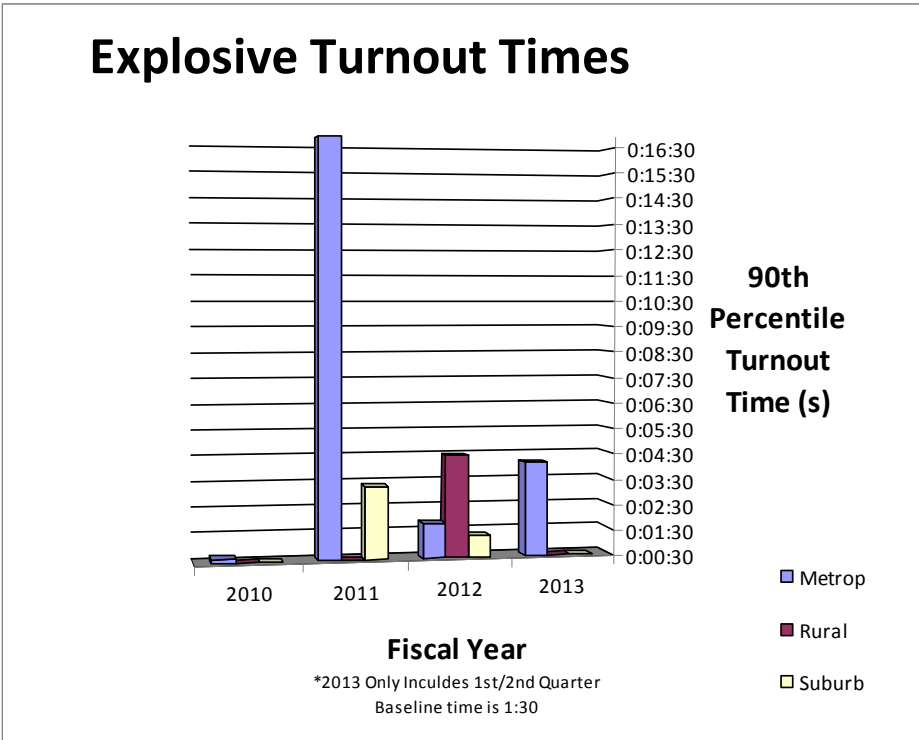
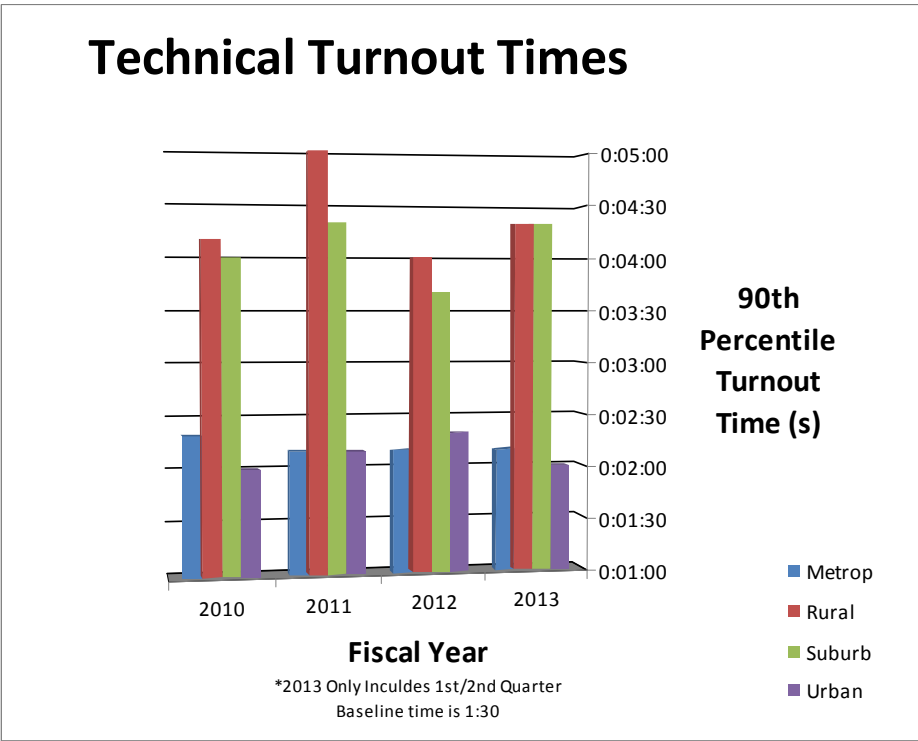
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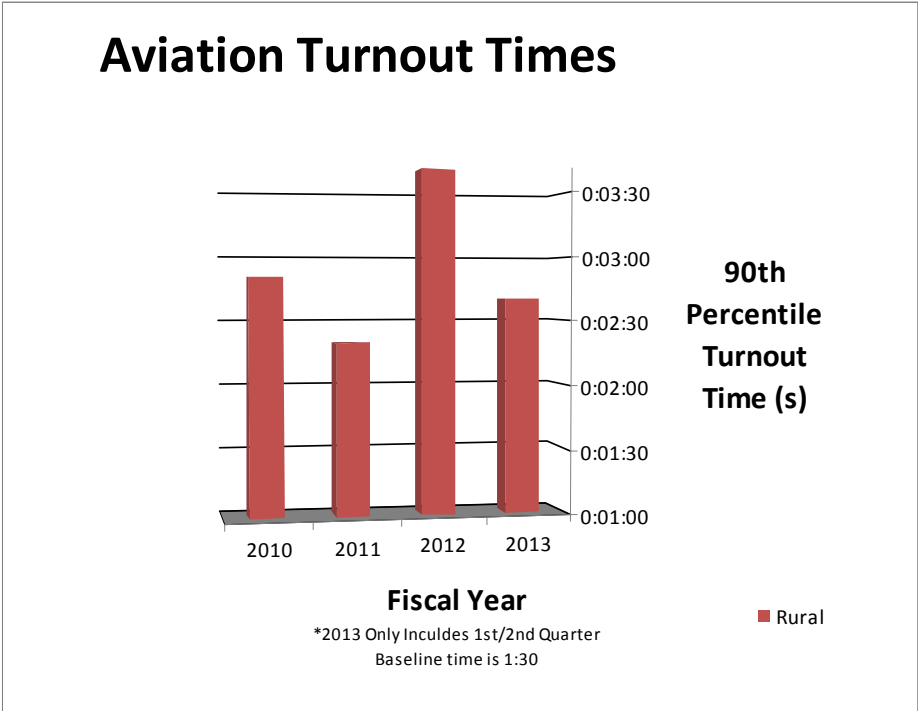
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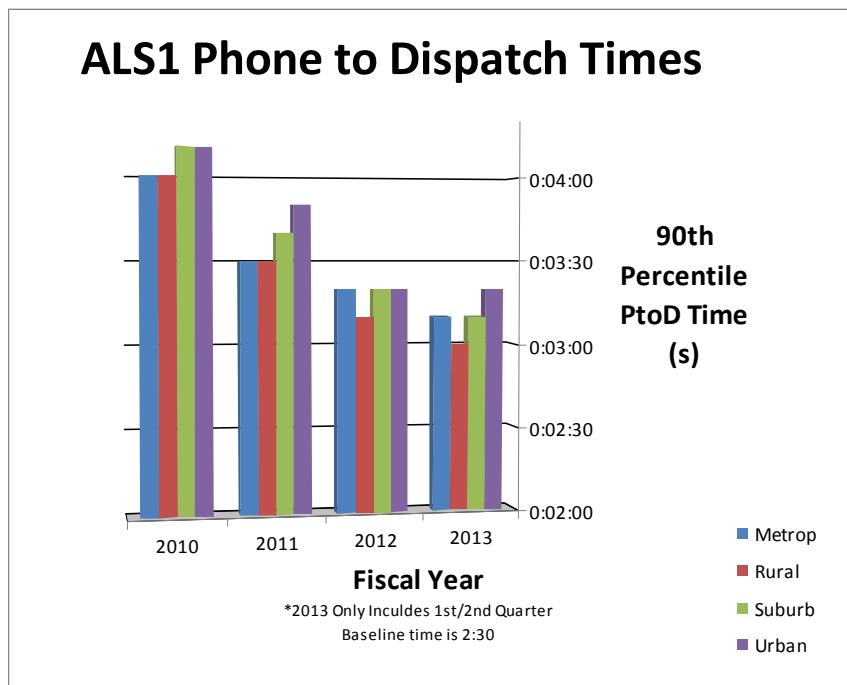


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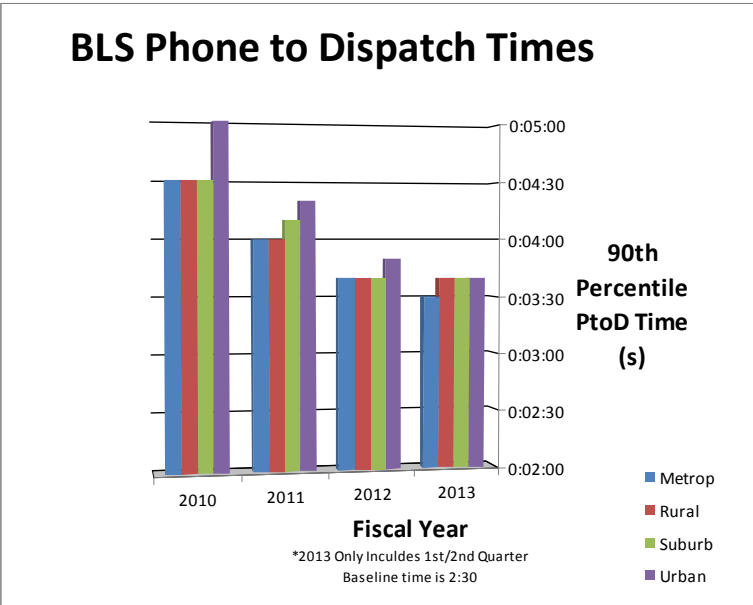
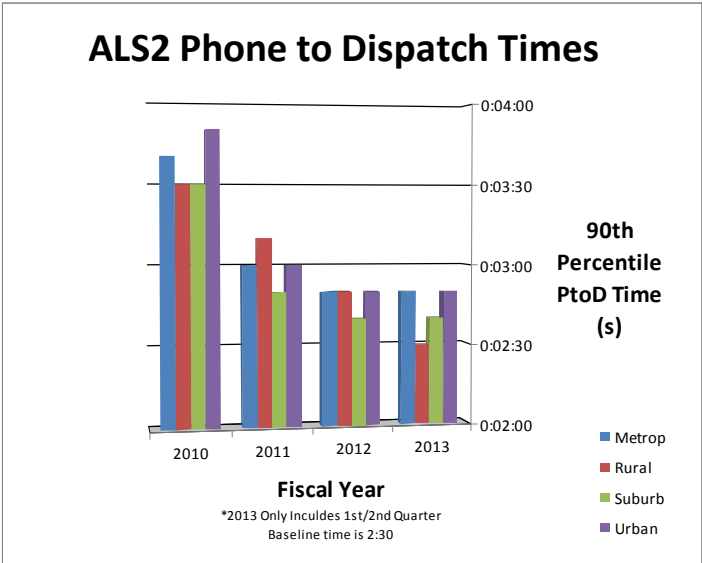
### Phone to Dispatch Times

The baseline set for phone to dispatch times across all service branches is 2 minutes and 30 seconds. This 90<sup>th</sup> percentile baseline time was not met by any of the service areas in any of the population densities, with the exception of rural ALS2 incidents and one rural aviation incident. A majority of the phone to dispatch times are between 3 and 6 minutes. Many of these times which greatly exceed the baseline goal of 2 minutes are for the 2010 and 2011 fiscal years.



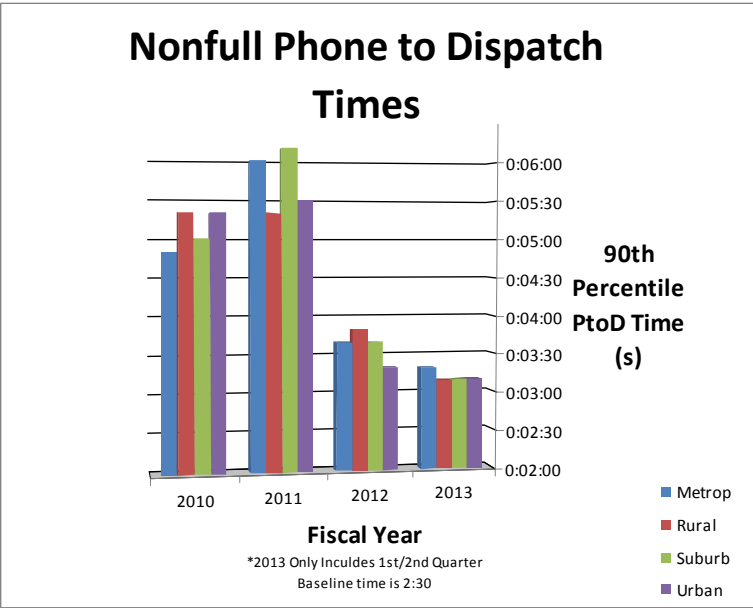
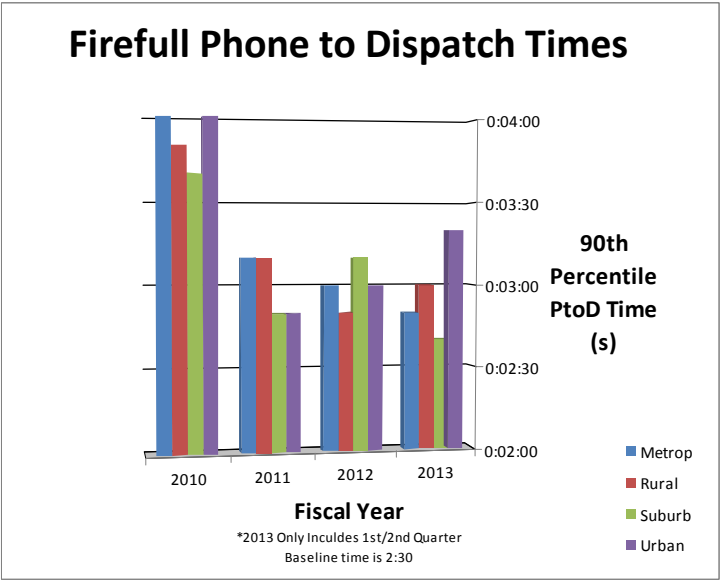
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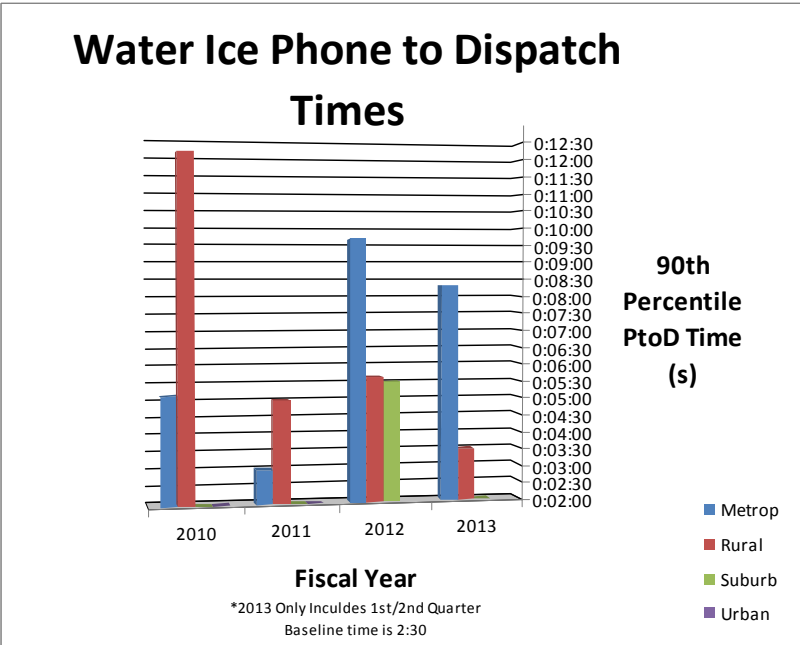
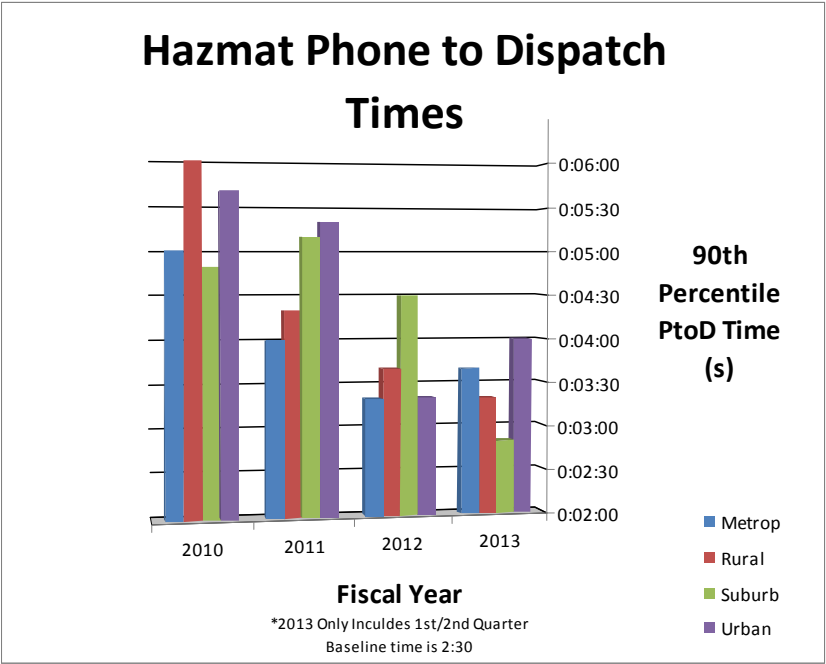


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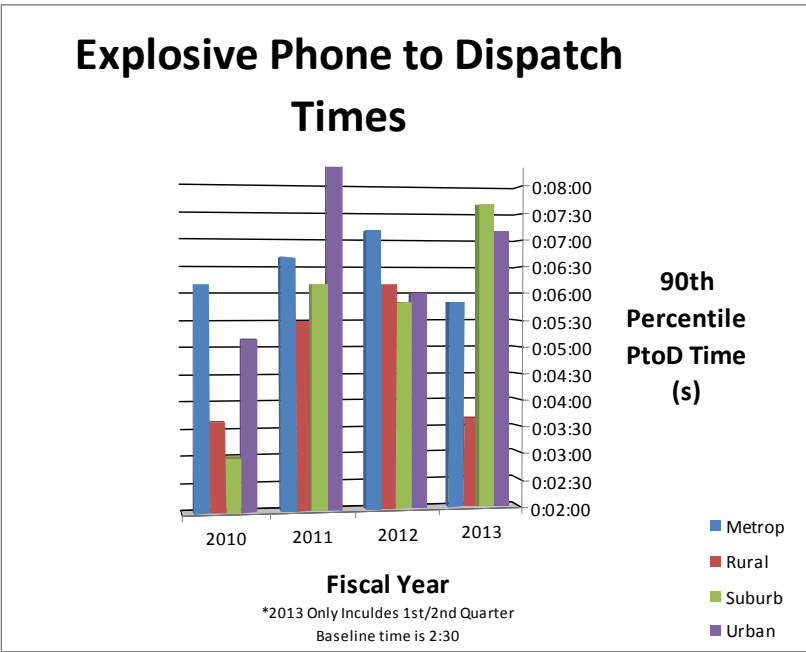
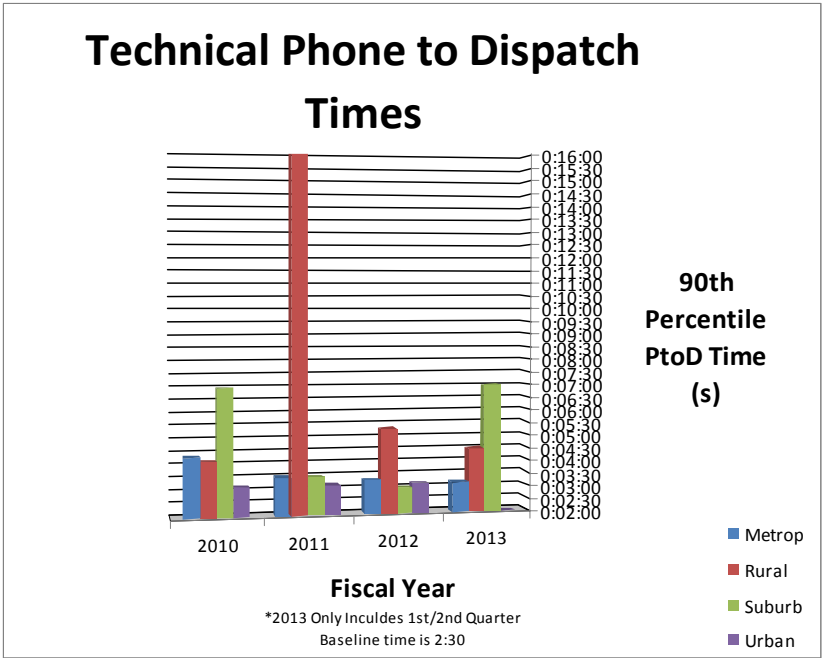
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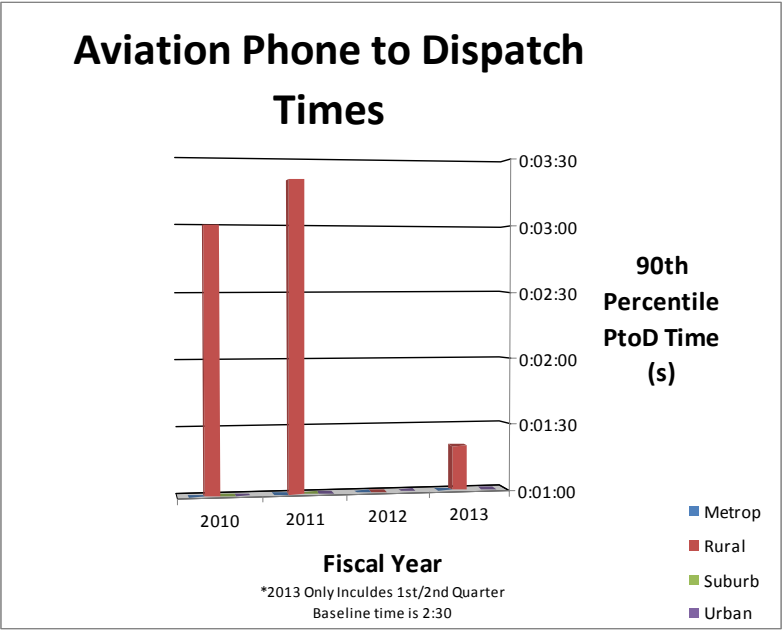


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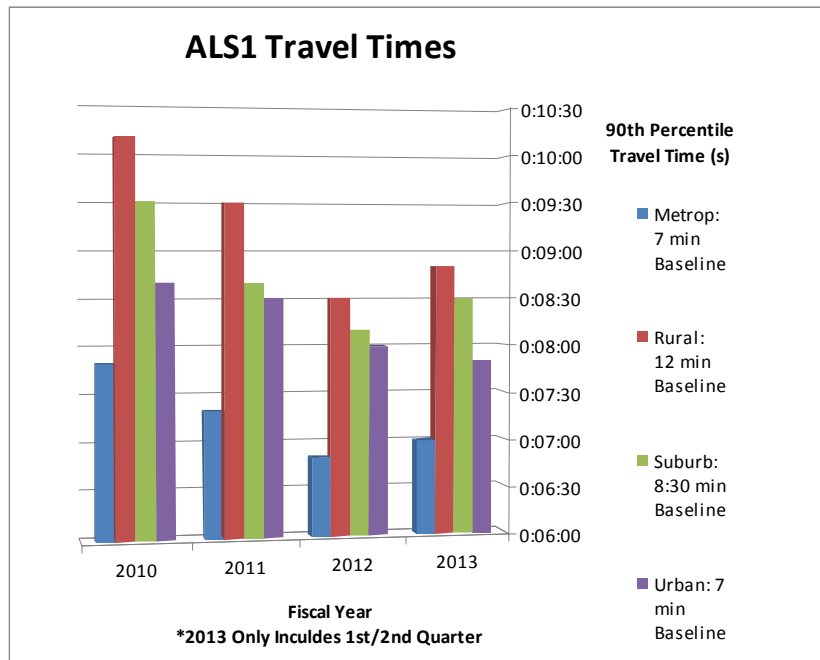


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### Travel Times

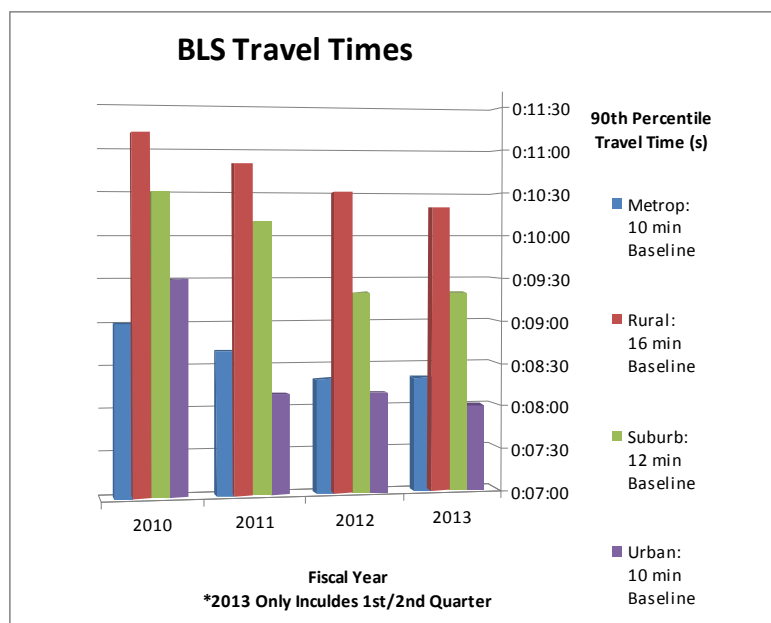
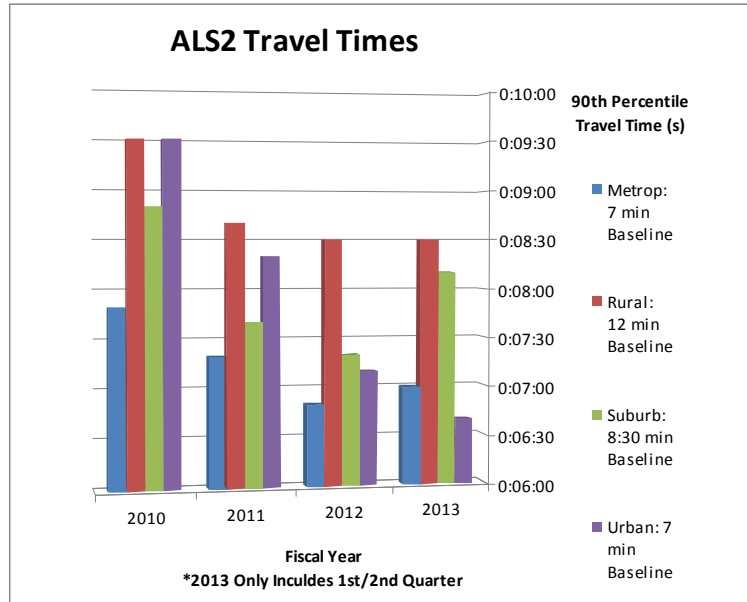
The baselines set for travel times vary for each individual service branch and each population density within that service branch. The baseline times for each service branch are set the lowest for metropolitan and urban, followed by suburban and the highest for rural population densities. For each service branch, about half of the 90<sup>th</sup> percentile times meet their respective baseline time, with the exceptions of BLS and Aviation where all baseline times are met for each year/population density. While only about half of the baseline times are met, there is not as much range in travel times as there has been in the previous cases (turnout and PtoD). There are hardly any significant outliers, as the times which exceed the baselines generally exceed them by just a minute or two.



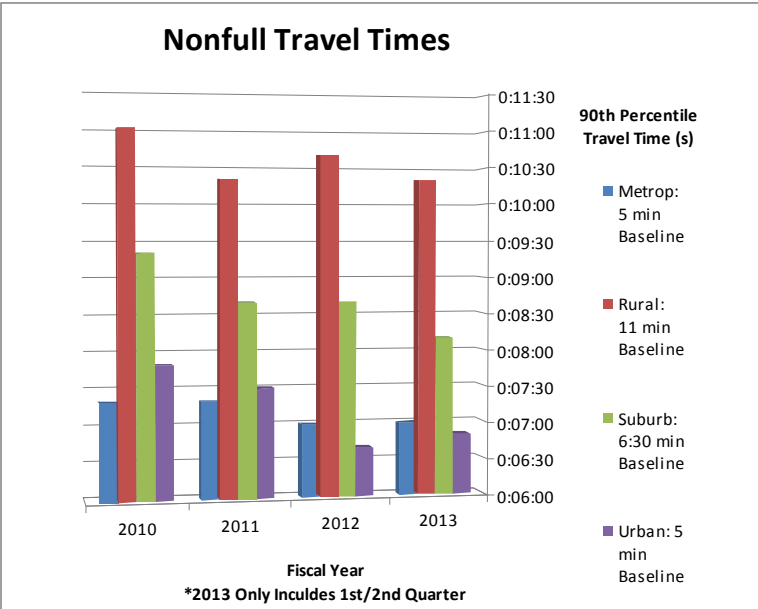
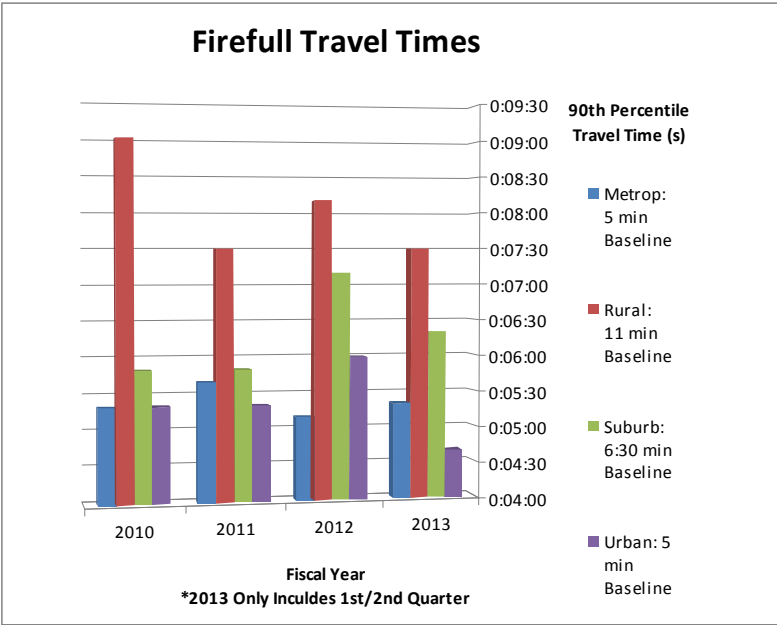


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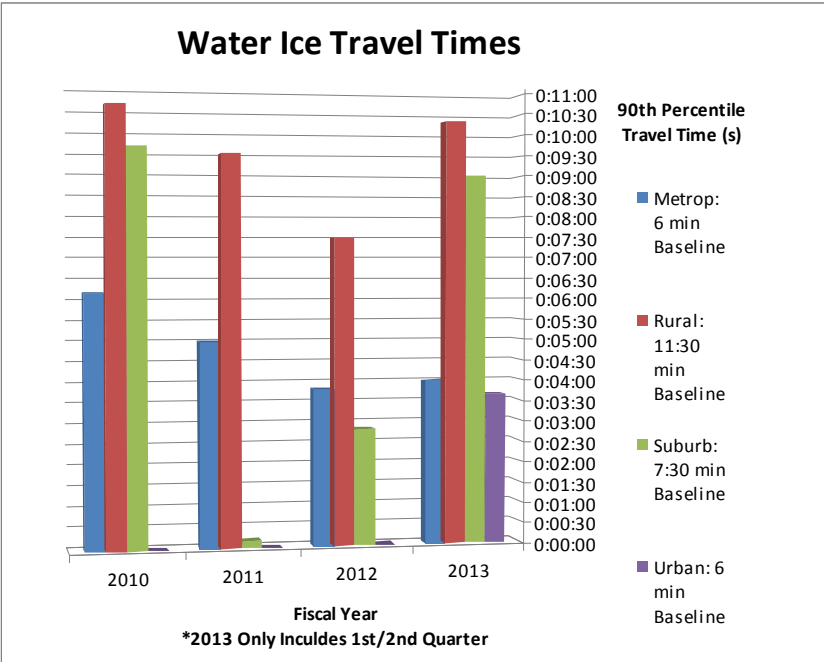
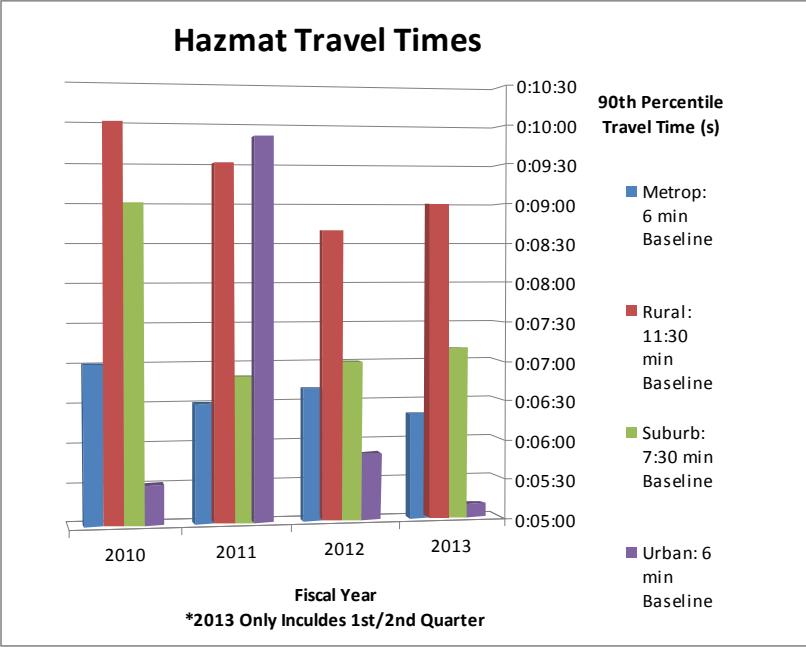
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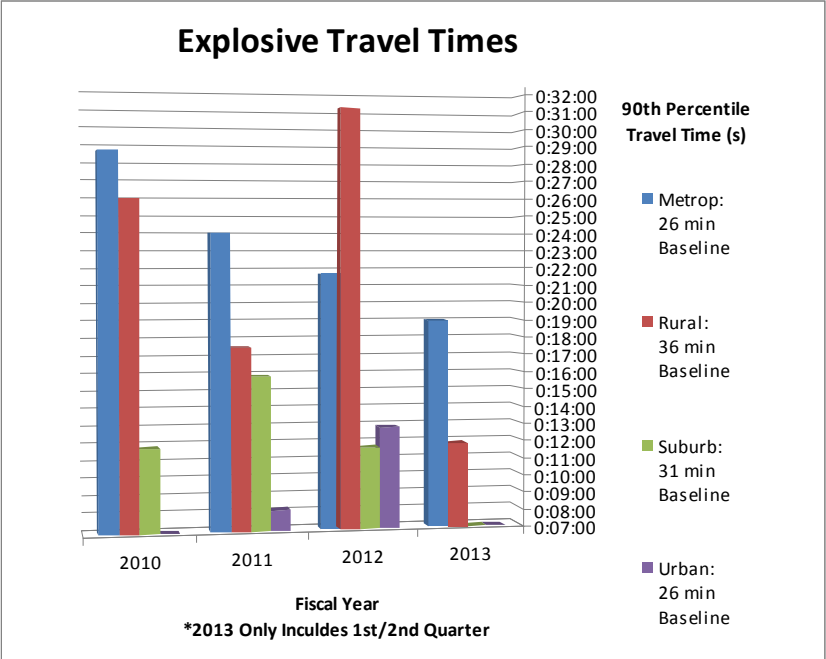
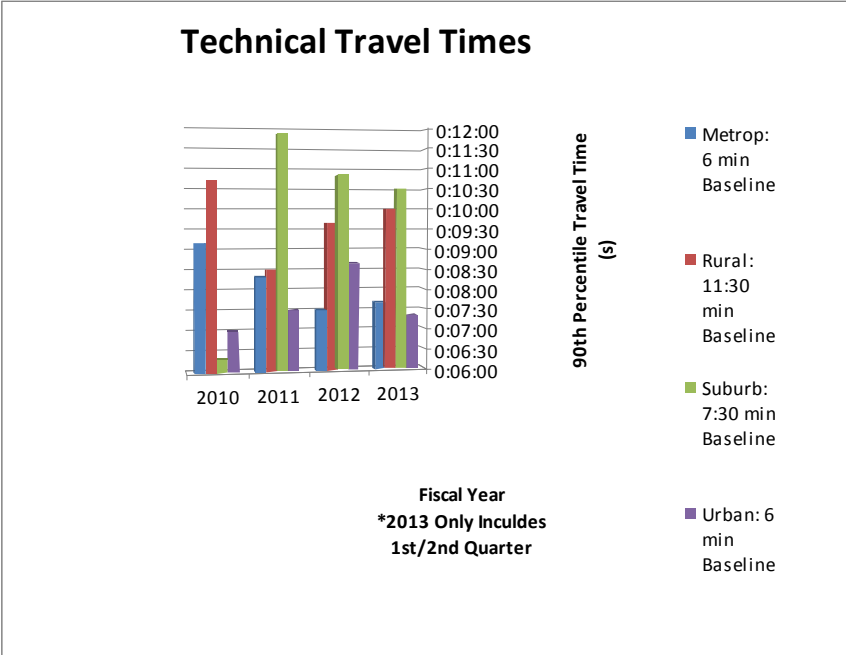


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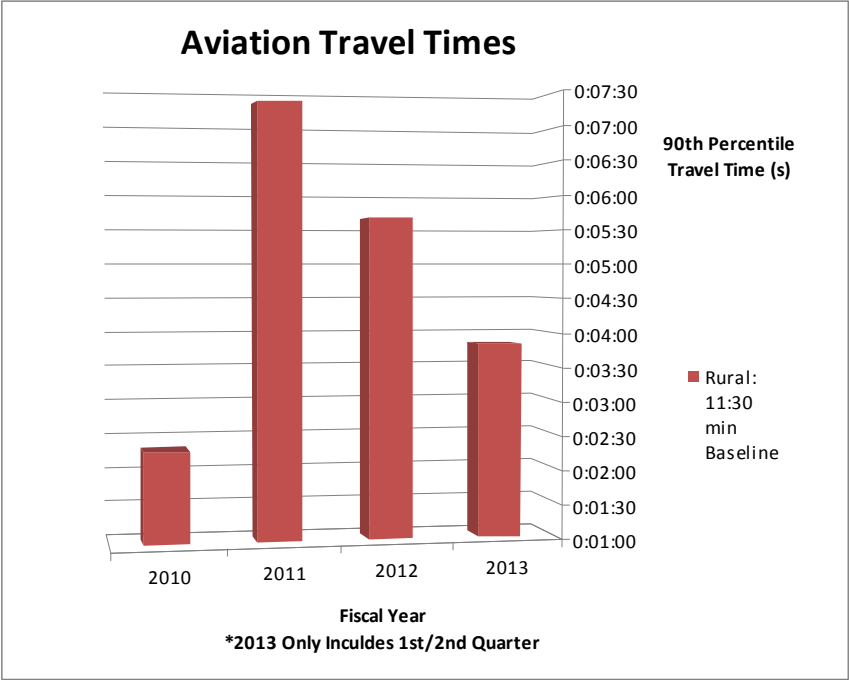
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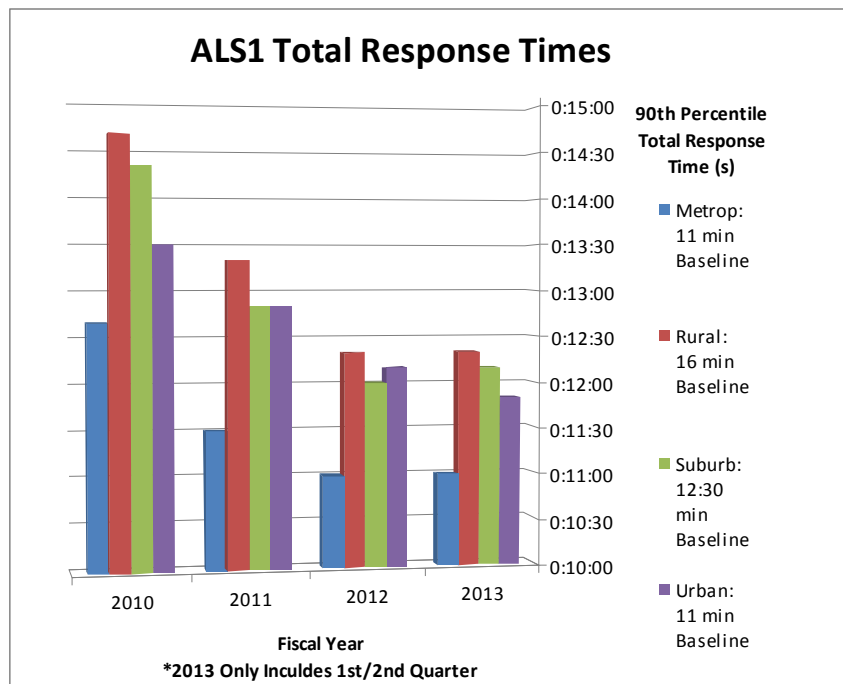
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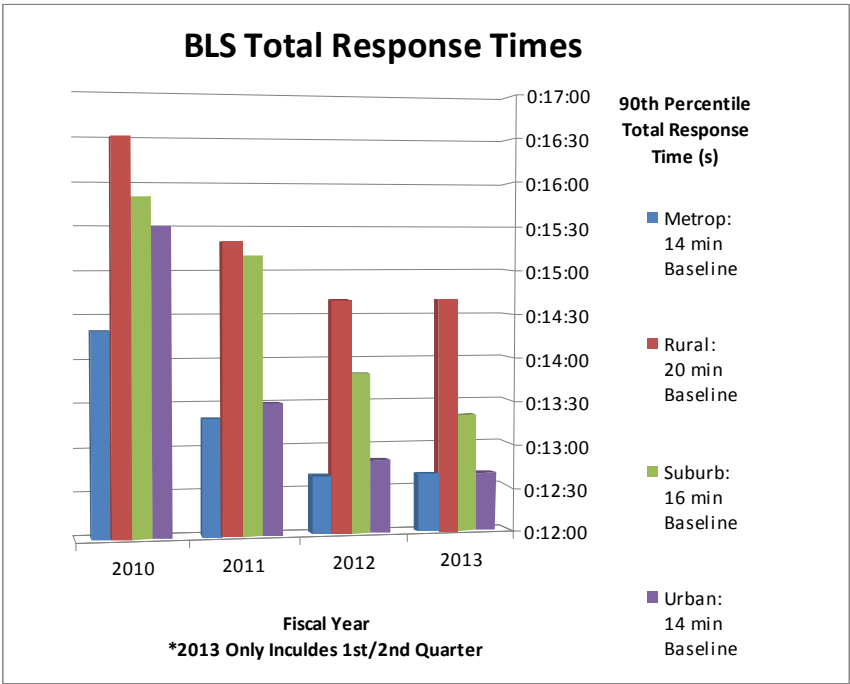
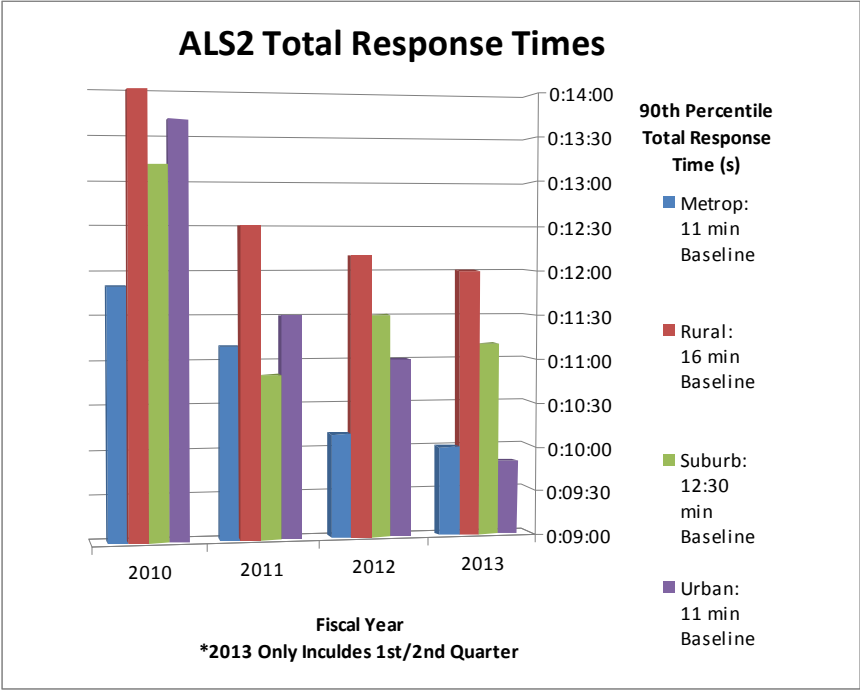
### Total Response Times

The baselines set for travel times vary for each individual service branch and each population density within that service branch. The baseline times for each service branch are set the lowest for metropolitan and urban, followed by suburban and the highest for rural population densities. For each service branch, a majority of the 90<sup>th</sup> percentile times meet their respective baseline time for each year/population density.

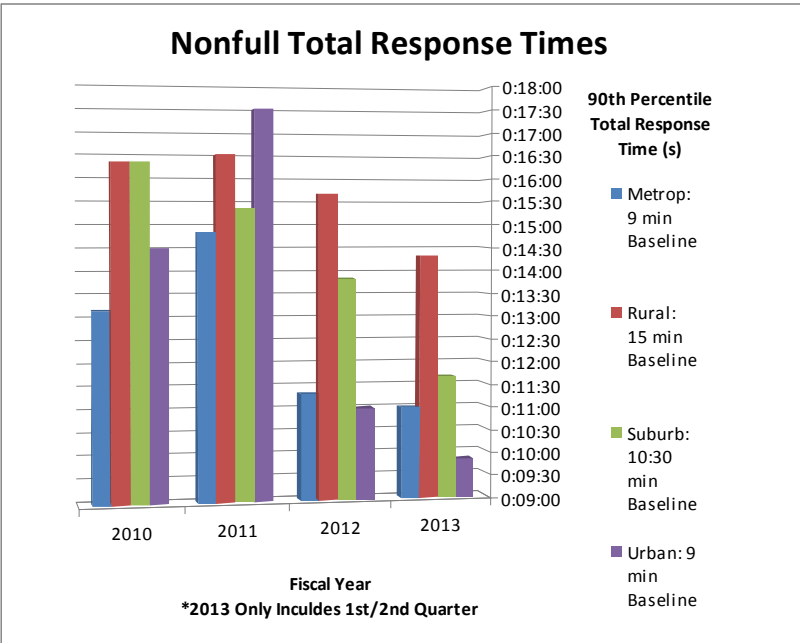
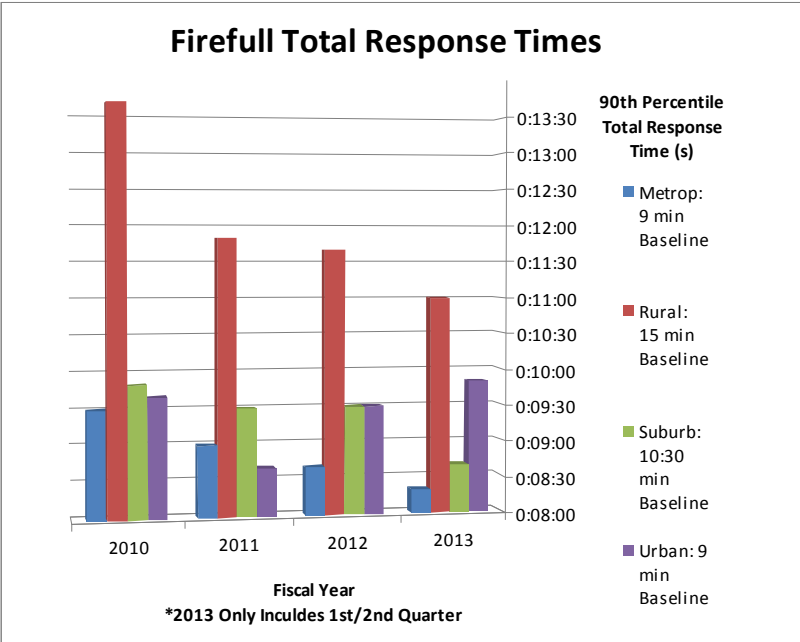
Most of the times which exceed the baseline times are for the 2010 and 2011 fiscal years. The range is rather high for total response times because it is a sum of all three previously mentioned components, including the Phone to Dispatch times which had a large range. Therefore, some of the times that exceed their baseline time exceed it by a great deal. For instance, the 90<sup>th</sup> percentile value for metropolitan water/ice response time is 28 minutes which is a full 18 minutes greater than its specified baseline time.



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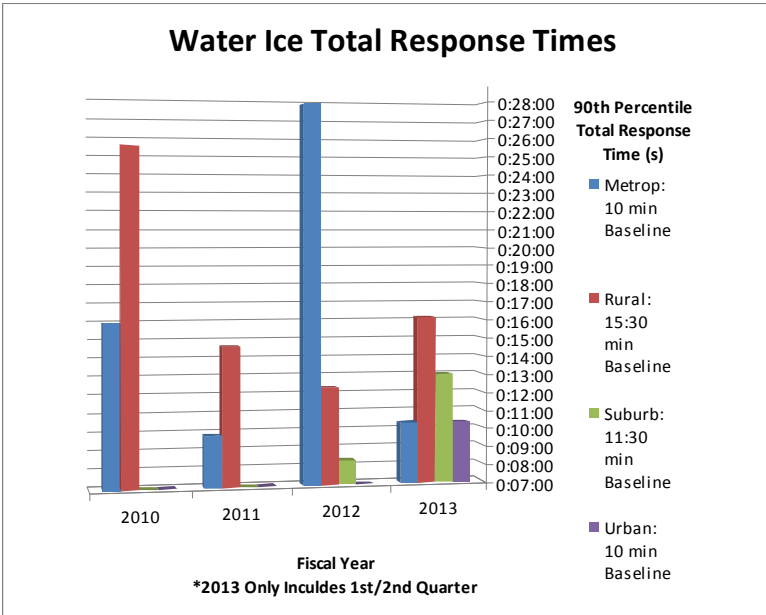
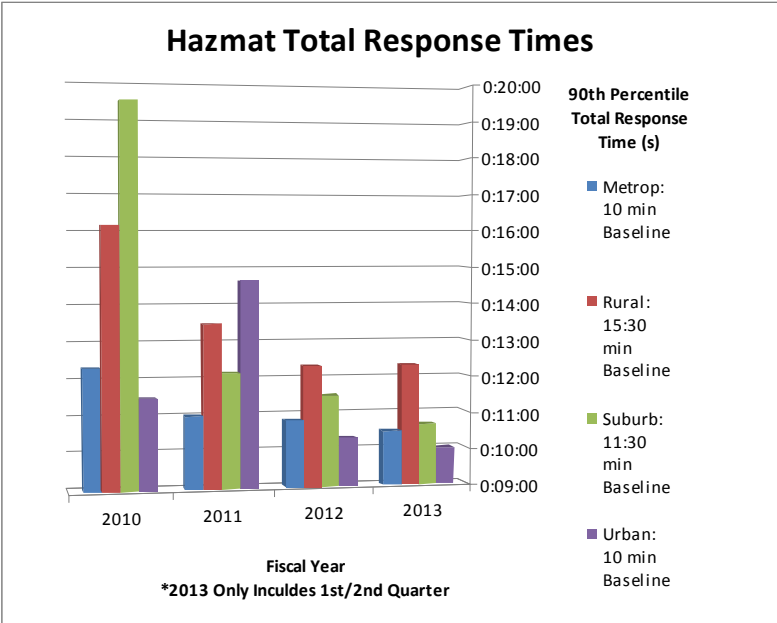


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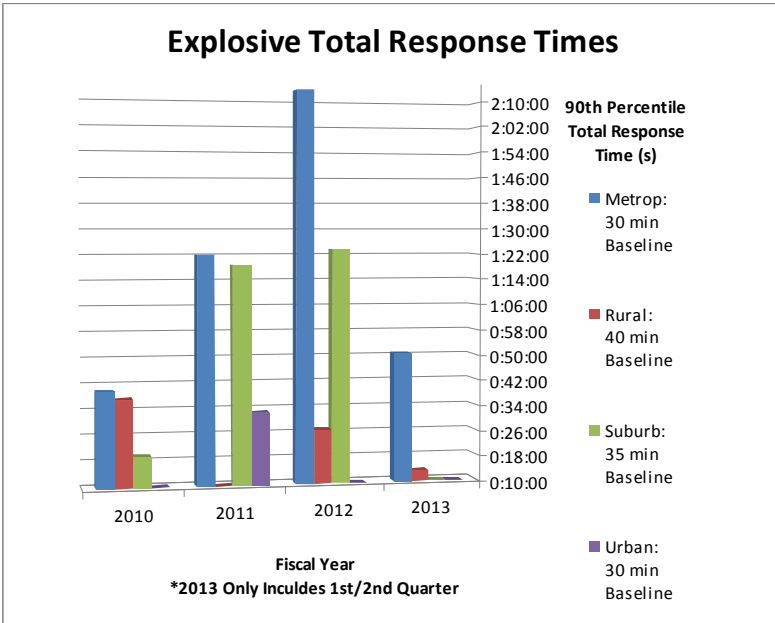
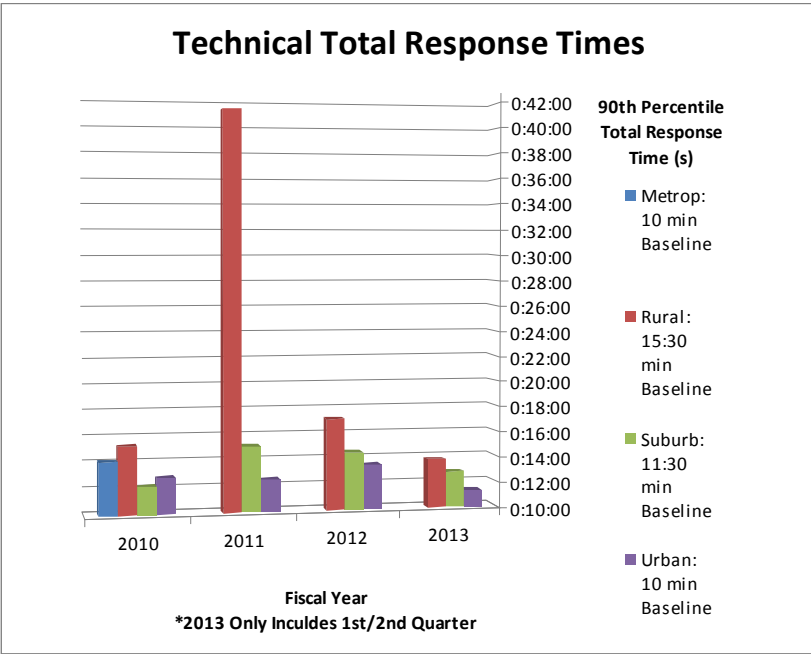


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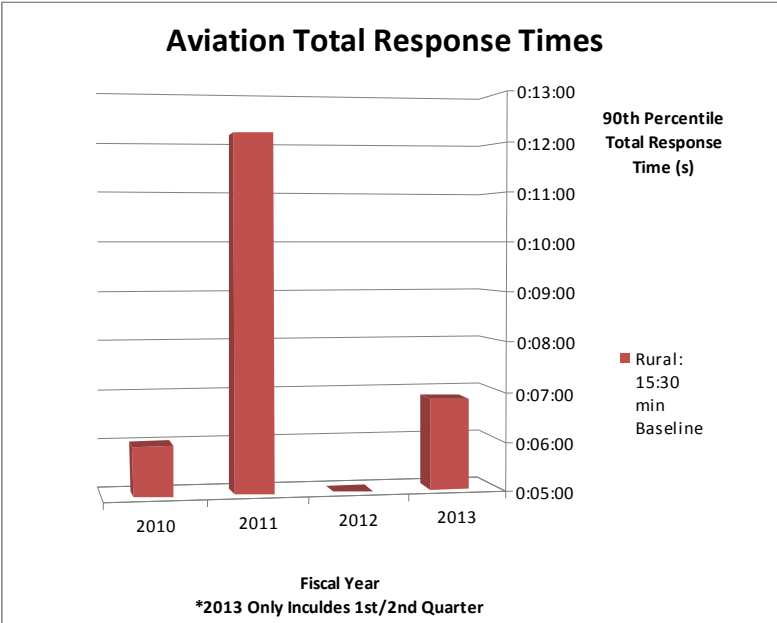
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#### By Service Branch

The service branches which generally have the highest response times are the Bomb/Explosives and Water/Ice Rescue programs. The explosives service branch particularly has very high response times in the metropolitan population densities, upwards of an hour. The Fire and Explosive Investigations section response data does not accurately reflect enroute, on-scene, and in-service status. FEI responds to incidents on both police and fire channels. Due to this fact along with a current CAD system that cannot integrate both fire and police reporting data, response times are generally inaccurate. Fire Investigators have to choose the most appropriate channel to utilize for response.

Explosive incidents are a dual dispatch event on the police radio channels. FEI will always respond to these events utilizing their police call sign on a police channel. Unfortunately response time data will not be captured this on the fire dispatch data systems. This problem will continue to skew data for bomb and arson investigation incidents.

ALS1, ALS2, and Fire-Full Assignments generally have the lowest response times; typically 15 minutes or less. While there is obviously a great deal of discrepancy in the response times between these different services branches, the baseline times were developed to take this into account and reflect these variations.

#### By Population Density

Throughout the data, it can be seen that the response times are influenced by the population densities and follow a basic trend. There is a decrease in response time within a greater population density. The four population densities can be ranked in order from highest response time to lowest as follows: Urban, Metropolitan, Suburban and Rural. This general trend can be found throughout the response time data as a whole. However, it is a trend that is subject to random variation. Not all the data is in accordance with this trend. The individually set baseline times were developed with these population density characteristics in mind and follow the same order listed above.

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#### Comparison of Response Times over Fiscal Years

Throughout the data, it is very evident that response times decrease every fiscal year. In almost all service areas and population densities, the average response times decrease from 2010 to 2013. Therefore, every fiscal year a greater number of the response times meet their respective baselines. This shows improvement in response efficiency over the past four years. Factors that will continue to impact improvement can be attributed to the following:

- **Modification of ALS Call Processing and Dispatch**  
Fire Chief's General Order 09-07 was implemented in 2009 to modify the procedure for ALS call processing and dispatch. ALS calls were designated as ALS-1 (requiring one ALS provider) or ALS-2 (requiring two ALS providers). ALS-2 calls are the most critical life-threatening emergencies – Echo and certain Delta calls – where two paramedics are required. With ALS-2 calls, ECC personnel do not have to wait until the conclusion of the time-consuming EMD protocol to dispatch ALS units; thus improving call processing/dispatch time as well as overall response time. With ALS-1 calls, ECC personnel must wait until the conclusion of the EMD protocol to dispatch ALS units.<sup>lxxix</sup>
- **Resources and procedural changes that are needed to accomplish this reduction include:**
  1. Additional ECC personnel
  2. Modification of time-consuming State and County protocols and procedures that unnecessarily delay call-processing and dispatch
  3. Upgrades to the County's communications system, including the computer aided dispatch (CAD) system and station alerting system, are being planned (ref. Public Safety Systems Modernization Plan, July 2009) and will lead to faster ECC call-processing and dispatch as well as faster turnout time.<sup>lxxx</sup>
- Development of turnout time goals that balance speed and safety
- Strict supervision by MCFRS battalion chiefs, station commanders, and unit officers to ensure personnel are meeting turnout time goals
- Strategic use of pre-alerts that may result in faster turnout times
- Replacement of the station alerting system<sup>lxxxi</sup>

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- Strategically placed stations – to be accomplished by adding new stations and, where appropriate, relocating existing stations
- Full implementation of the four-person staffing plan and 1 and 1 ALS model
- Deploying additional apparatus/staff and deploying them strategically
- Continued community outreach campaign (i.e., “Hear Us, See Us, Clear for Us” campaign initiated in FY06) that encourages motorists and pedestrians to yield right-of-way to responding MCFRS vehicles
- To the greatest extent possible, use of response routes that lack traffic calming devices<sup>lxxxii</sup>